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ABSTRACT

The costs of owning and operating physical facilities are consuming an increasing share of the budgets of colleges and universities. In the past, academic and operating units of colleges have viewed their space as a free commodity and often used it extravagantly. Space costing is a method of cost accounting the space and operating and maintenance expenses to the individual unit or program of an institution. With this method a central administration would assign the costs of "rent," operation, and maintenance to each unit's total budget. The manager of each section, department, or college can then determine how best to spend his or her budget and make decisions about the size of the department's territory and staff, its hours of operation, and frequency of maintenance. The report discusses the issues of whether fiscal responsibility should also include managerial control of the physical environment and shows how space costing would affect three areas of an institution's financial and resource distribution: the utilization of space on campus, the cost and funding of plant operating and maintenance, and the recovery of overhead costs for individual research projects. (Author/MLF)

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# Space Costing: Who Should Pay for the Use of College Space?

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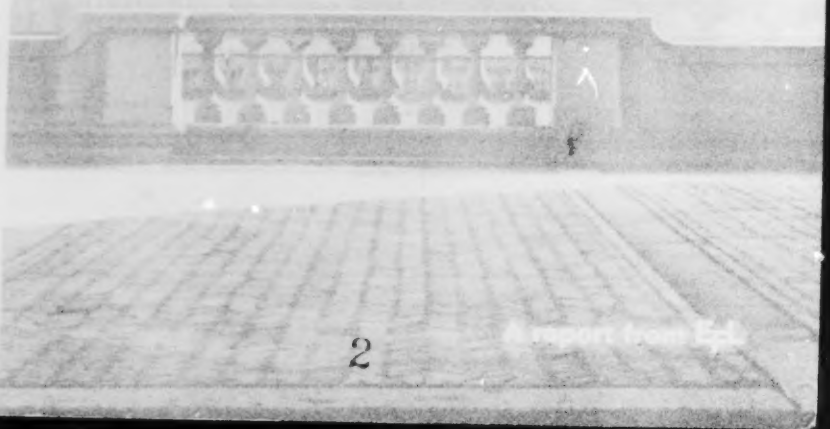

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# Space Costing: Who Should Pay for the Use of College Space?

A report from EfL

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*The problem is to maintain flexibility in a period of declining growth when you have to change by substitution or reallocation—it was easier before when you could change by addition.*—Earl F. Cheit

# Foreword

The costs of owning and operating physical facilities are devouring an ever increasing share of the budgets of colleges and universities. In the past, academic and operating units of colleges have viewed their space as a free commodity and often used it extravagantly. Maybe if those units included the costs of space in their budgets, they would use space more efficiently and operate it more prudently. EFL believes this concept of facilities management—space costing—to be important and developed this report to describe it, suggest some pros and cons, and offer some examples and sources of information.

For some colleges and universities it may be an idea well worth considering—and implementing.

EFL retained Sy Zachar to write this report. He is an environmental analyst with special interest in the management of facilities in higher education.

*Space Costing* is part of a project on higher education facilities supported by The Andrew W. Mellon Foundation. Two other titles are being published with this report, *The Neglected Majority: Facilities for Commuting Students*, and *Housing For New Types of Students*. The foundation also supported two earlier reports, *Generating Revenue from College Facilities* and *Campus in Transition*.

EDUCATIONAL FACILITIES LABORATORIES

# Introduction

Space costing is a method of cost accounting the space and operating and maintenance expenses to the individual unit or program of an institution. With this method a central administration would assign the costs of "rent," operation, and maintenance to each unit's total budget. The manager of each section, department, or college can then determine how best to spend his or her budget and make decisions about the size of the department's territory and staff, its hours of operation, and frequency of maintenance.

If space costing is instituted, the administrators have to determine how the charges should be levied—for the area of space occupied, and for the services and resources consumed by the occupants. This raises some critical issues: Should fiscal responsibility also include managerial control of the physical environment? Thus, if an academic unit is in charge of its own budget, should it be allowed to determine how the space is heated, lighted, and who cleans it?

The following pages discuss these issues and show how space costing would affect three areas of an institution's financial and resource distribution: the utilization of space on campus, the cost and funding of plant operating and maintenance, and the recovery of overhead costs for individual research projects.

## Space Costs Money

A college or university is the owner of all institutional space and may be viewed as the "landlord" of its campus. Academic and operating units within the institution may be likened to "tenants" of the university. Academic units have control over "their space" and view it as such but incur no costs for that space and are generally divorced from any involvement with their physical environment.

The institution finances, builds, and maintains the building as well as provides electricity, heat, airconditioning, water, sewage, and other services. All of these are included in the "free rent."

Space has a cost, and that cost is increasing. For instance, institutional managers have watched their utility and fuel costs increase anywhere between 50 percent and 100 percent. This increase absorbs resources which could be used for other components of the educational enterprise.

The total amount spent—and therefore the potential for saving—on operating and maintaining physical plant is $2.8 billion. During 1974-75 the national average expenditure in United States colleges and universities was $6,573 for each full-time faculty member. For full-time and part-time faculty the cost average drops to $4,234. During the same time span the average expenditure per student was $273. The American Council of Education says that nearly half, $124 of the $273, was spent on energy. From this we can project that in 1976-77 the energy cost per student was $170.

John Hobsteter, Associate Provost for Academic Planning at the University of Pennsylvania, put the issue quite simply: "Space costs money." He continued, "Because universities have traditionally funded their space through charitable contributions, space has come to be regarded as almost a free good." Whether space has been constructed with public or private funds for a large multiversity, four-year college, or community college, there is a universal truth to Hobstetter's statement.

## The Value of Space

Not only does space cost money to construct, operate, and maintain, it has value of and by itself. Space is like money, it changes hands. Tangible and intangible items can be bought with it. There is always a price to pay for "that additional office." As space becomes scarce, its value increases and the price of additional space becomes higher. The tighter space becomes, the more resources must be expended in securing it.

Space is also power and is therefore very political. The control of space, as with the control of any resource, gives power to the controller. Man almost by instinct must establish territorial boundaries in which he is safe and has control; thus "my desk" or "my office." The boundaries are sometimes invisible, but they exist. For example, the person occupying the space closest to the window in a shared office usually controls the window.

This sense of territoriality, this inner drive towards *lebensraum* can extend with time and increase in activities and position down the hallway, taking in laboratories, classrooms, and even other offices. Once space is secured, a squatter's right is often assumed, and that right is treated as inviolable.

The amount of space controlled reflects, rightly or wrongly, on one's worth, responsibilities, and importance. It can also reflect cunning, resourcefulness, and an increasing portfolio. An individual who loses space, regardless of the reason, is perceived as having "lost."

## Maintaining Flexibility

The growth period of the 1960s and 1970s is over (see EFL's *Campus in Transition*), but institutions are not stagnating. By their very nature, colleges and universities are in a continuous process of self-transformation.

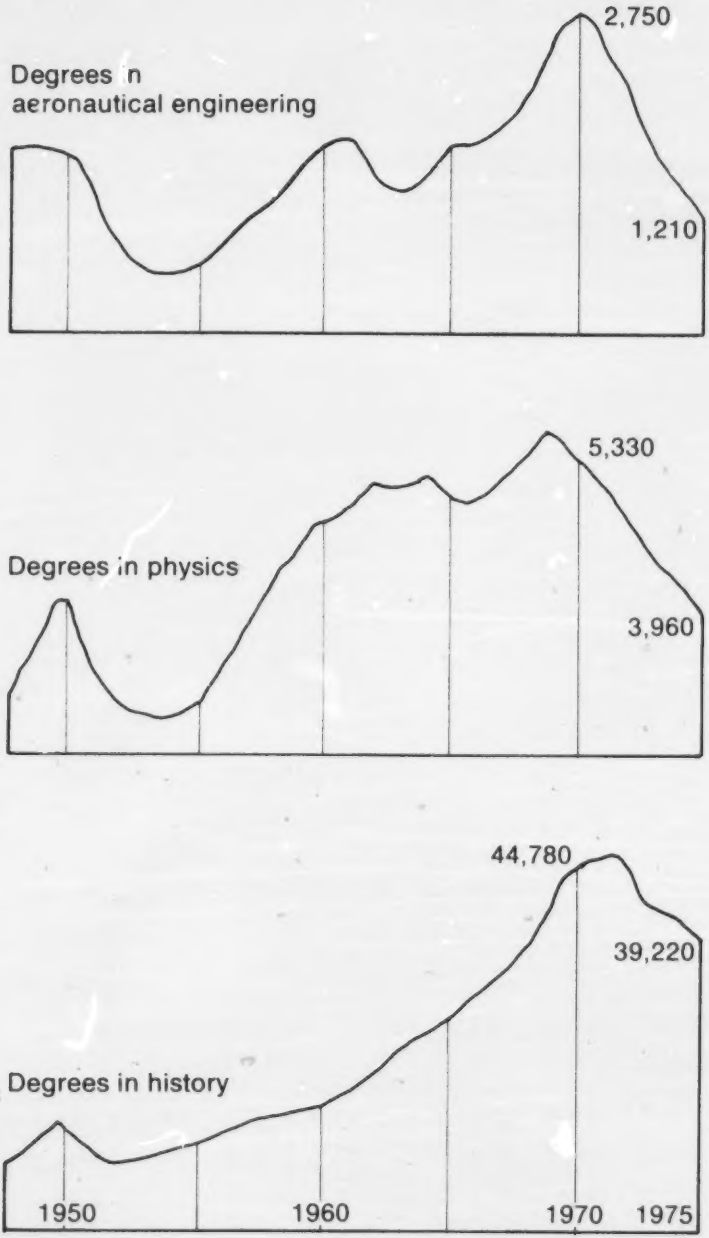
Disciplines grow, change, and spin off new ones. Societal needs change, and higher education is affected by the values that student society currently holds as important. Thus, enrollments rise and fall with perception of future employment potential. Students are sensitive to the potential job market, and these have impacted a variety of programs, such as law, business engineering, and computer science.

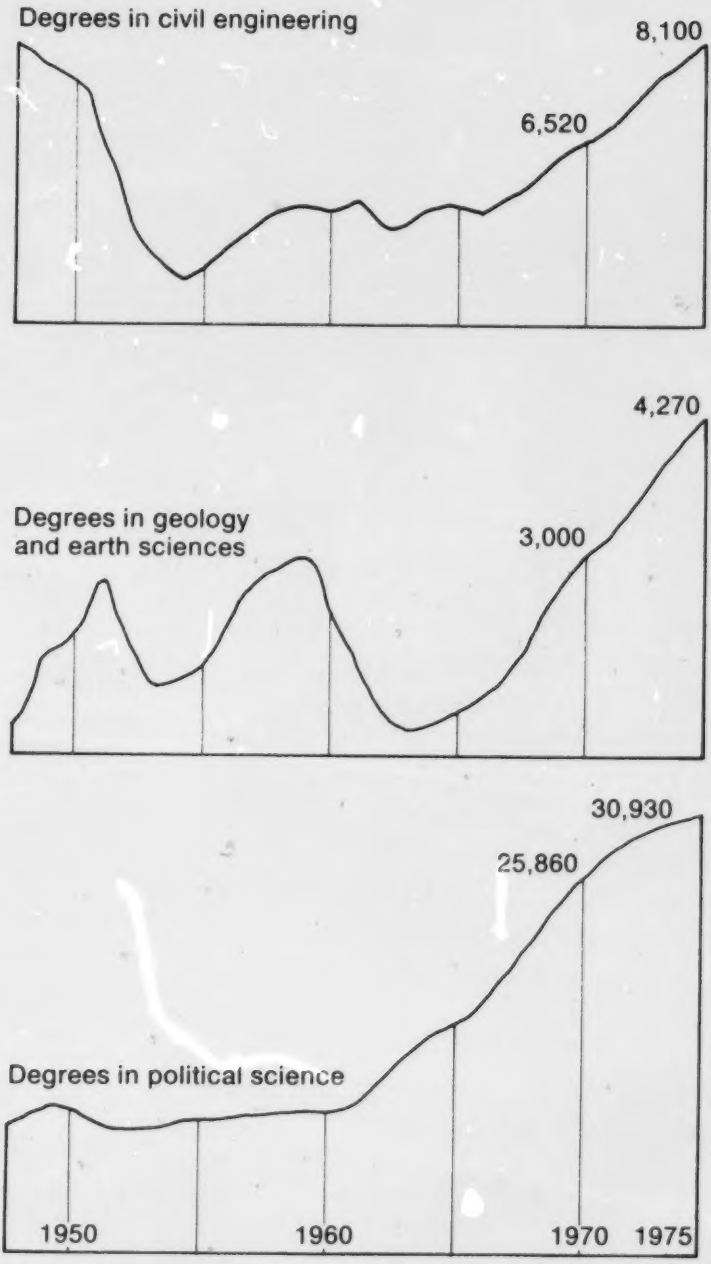
As the charts of degrees granted show, there has been considerable shifting of students between comparable disciplines. Decreases in one area are not always matched by increases in another. But, the old question, "What can one do with a history degree?" may have been answered by the growth of political science, and by extension, law. The layoffs in the aerospace industry in the early 1970s probably accounted for the dramatic drop in students seeking degrees in that discipline. As colleges and universities go through a continuous changing process, the physical environment must change to meet new program needs. In periods of prosperity, changing needs are met by expansion of the physical plant. With the current shortage of resources and capital, the words of the vice-president of administration at MIT are very appropriate, "We must learn to turn around within our own skin."

With the projected enrollment decline, colleges and universities should be considering what to do with underused facilities that no longer warrant the cost of maintaining them. Among the alternatives will be closing down the facility and either demolishing it, "mothballing" it, selling it, or donating it; or converting the facility for a use that would justify the cost of maintenance and operation.

In order to accommodate these changes, space will have to be flexible. In the past flexible space was the avant-garde approach to building facilities. Flexible space today needs to

be the philosophy of all institutions. Space costing is a philosophical subset of flexible space. It is a tool that can be used to achieve flexible space, a tool that may help institutions better manage their plant resources.


Degrees in aeronautical engineering
2,750
1,210
Degrees in physics
5,330
3,960
Degrees in history
44,780
39,220
1950
1960
1970
1975


Degrees in civil engineering
8,100
6,520
4,270
Degrees in geology
and earth sciences
3,000
30,930
25,860
Degrees in political science
1950
1960
1970
1975

## Distribution of Resources

The financial commitment of higher education to its existing plant is staggering. The average value of physical plant for 1974-75 was $6,082 for each student. The cost of operating and maintaining the plant throughout the U.S. in the same period was $2,786,789,000. This was 8 percent of the total current fund expenditures of higher education (see table), and this percentage has increased steadily from 6.8 percent of the budget in 1967-68 to the 8 percent for 1974-75. While these figures are national averages, 1.2 percent of an institution's budget can represent a fair number of faculty positions or other institutional needs.

| | 1967-68 | 1969-70 | 1971-72 | 1972-73 | 1974-75 |
|---|---|---|---|---|---|
| Current fund expenditure in millions of dollars | 16,481 | 21,043 | 25,560 | 27,956 | 35,058 |
| Plant operation and maintenance in millions of dollars | 1,127 | 1,542 | 1,928 | 2,141 | 2,787 |
| Plant operation and maintenance as % of total | 6.8 | 7.3 | 7.5 | 7.7 | 8.0 |

Table based on data from the U.S. Department of Health, Education, and Welfare, National Center for Educational Statistics, Financial Statistics of Institutions of Higher Education.

Universities and colleges have five basic resources: faculty, endowment or state appropriation, tuition, contracts and grants, and physical plant. The physical plant (space) is a resource that is expended in the academic enterprise and has a direct relation to the cost of instruction and research. The allocation of the resource is tied directly to the overall resource allocation process of the institution.

A broad view of resource distribution in higher education is presented by John Millett, former chancellor of the University of Ohio, who observed that colleges and universi-

ties see themselves as preservers, transmitters, and advancers of knowledge, and as such act rationally in the distribution of their resources. But colleges and universities have never defined their rationale for resource allocation, and the allocation of these resources is an exercise of power.

The distribution of resources is either an economic or political process, Millett states. In an economic process, the allocation of resources is determined in a free market relationship. In a political process, the allocation of resources is made by those who govern. It is also called a planning process, wherein the decisions of a few affect the many.

Before 1968, and the beginning of student unrest, the budgets of colleges and universities were made in a political planning process. Budgets were prepared by central academic and administrative officers and approved by the governing body of the institution. The disruptions of the late 1960s and early 1970s brought faculty and students into the budgetary process in the form of representation on committees and senates. But it is still a political planning process.

This process, Millett argues, has brought about a very complex resource allocation procedure using accommodation, consensus building, and sometimes logrolling. Furthermore, increased student and faculty participation has come about at a time of shrinking income. When budget restraints are required, faculties have been reluctant to make cuts in the academic program. Instead, they have chosen to cut student and other university services.

A market approach to resource allocation allows decisions to be made on the basis of supply and demand, Millett argues. What "sells" is what people need, desire, and are willing to pay for. Millett sees this as simplifying the budgetary process.

## Current Space Allocation Systems

The allocation of space in higher education takes a number of forms that will conform to a ba[illegible] ground rule: space, once assigned, is considered "owned" by the unit. This generates the prevailing philosophy: "What is mine is mine, and what is yours we can negotiate." The space allocation process is not dissimilar to budgetary processes, and the view of space as a resource may reflect the general institutional resource allocation philosophy. The following principles are attributed to Kirk Moses of the Academy for Educational Development.

**1. The Squeaky Wheels Get the Grease (TSWGTG)** Under this system the academic managers and bureaucrats with the most persuasive abilities and cunning, "new and improved" programs, and having general Machiavellian traits get the most space. Even though space may be centrally controlled or dispersed, TSWGTG knows how to use the system to get what he "needs."

**2. The Formula Method (TFM)** This system is usually used by state systems and large private institutions. TFM was a natural development of the expansionism of the last decade. A rational, quantitative, and scientific method for determining space requirements had to be created, and on the whole, they have succeeded well in determining the quantity of space various programs and their components require. Once the space is constructed, however, the formulas are often ignored as programmatic changes occur, new research fields are funded, and old ones are dropped. Depending on the internal organization and source of support of the institution, a new space need may be subjected to formal considerations, which never seem quite satisfactory, particularly in research; or TSWGTG or any combination of the [illegible]o might occur. Should the problem be serious enough, it reaches the top levels of administration.

**3. Space Czar** The space czar is a detached administrator whose responsibility is to watch out for everyone's space needs and weigh all requests impartially. He has all the space information support necessary to make rational decisions, and

can provide managerial reports to administration. Space is too valuable a resource, however, to put into the hands of one person or office, so the czar is really a space manager who often reports to a committee of university officials and faculty, often headed by a top ranking academic administrative officer.

Information is used as a basis for decision making. The committee decides whom to spend the space resources of the institution on. Where this system works well, it works very well. If the institution believes in this approach and provides the necessary support to the space management office, the system can be very effective.

To use Millett's term, however, in all of the above systems the decision making is political. They contain no incentive for the user to reduce demands for space or to be concerned with use patterns that absorb resources such as utilities. Neither is there any incentive for using space more efficiently. An "owner" does not care if an office becomes vacant or a seminar room is only used occasionally. The general view is that vacant space may eventually be needed and is therefore being "banked" for the future. But it is not earning interest and it is costing the institution money. Although temporarily "underutilized" it is still being heated and maintained to some degree; debt service and insurance are still being paid for it.

An academic manager will fear that if he gives up an office he will never get it back. But he may not need that office next year, or he may need three more. If the manager were paying the cost of space, then this year he might happily give up the space to another department and use the income for another purpose. The following year he may get a grant or contract that requires three additional offices. The need justifies his renting or "purchasing" additional space.

# A Model for Space Costing

Space costing is a shift from a political space-resource-allocation mechanism to one allowing market forces to come into play. It is a decentralization of the resource-allocation process, but the degree of decentralization is quite variable.

The illustrated model of space costing shown below redistributes the physical resources of the university. It is multifaceted with parts that can be used independently to suit the academic goals and operating objectives of the institution.

**Physical plant resource distribution**

**Present system**
Institution appropriation
$↓
President
$↓
Vice-president for finance, planning & facilities
$↓
Physical plant department
$↓
Expended for heat, electricity, maintenance, etc.
↓
Colleges/departments

**Space costing model**
Institution appropriation
$↓
President
$↓
Provost/vice-president for academic affairs
$↓
Colleges/departments
$↓
Physical plant department for heat, electricity, maintenance, etc.

Under this model, space charges would be based on the actual operating and maintenance costs of the facilities. This could also include amortization and insurance. The total costs of these components would be computed on a square foot per building basis. Grounds care can also be included.

For exclusively held space, the charge to the department or college would be the total building costs. For shared space, the costs would be prorated according to the area occupied. Multiuse space such as classrooms and teaching laboratories would be held by a central office which would charge departments for the percentage of time they occupy it.

An alternative to charging for time used would be to base rates on the desirability of teaching hours. This might help institutions even out the bunching of classes on, say, Tuesday, Wednesday, and Thursday from 10 A.M. to 12 noon, and 1 P.M. to 3 P.M. While the individual costs of space would equal the total charge for space over a semester, classes taught at popular times would pay more per hour than classes in the early morning, late afternoon, and evenings.

The funds for space costs would be allocated to the operating budget of the college department instead of to the physical plant department. With this type of monetary responsibility, the academic manager can more completely see the total cost of meeting the academic objectives of his college or department. Since resources can be substituted, managers become aware of the cost of space and environmental support. This is similar to the experience of many institutions when their telephone bills were broken down and charged to individual instruments instead of being put on one central bill. If the plant department no longer pays the utility bill, its "customers" may heed the conservation measures more closely.

Under this model, the academic unit becomes a client of the physical plant department that would contract for services such as heat, airconditioning, electricity, water, and sewage, as well as custodial services and maintenance. Since they are paying for service, the units will have leverage with the plant department that they did not have before. (If you are paying $50,000 for services, you make sure you get them.)

The level of custodial and maintenance services required

would be determined by the physical plant department and the academic units. Each party has information and expertise regarding the needs of users, their activities, building requirements, and health and safety codes. From these discussions, an over all approach to operating and maintenance should develop that meets the physical requirements of the users and the long-term integrity of the building and recognizes the budgetary restraints under which these services are provided and required. The academic manager will attempt to get the highest level of service possible for the least costs, and the physical plant director will be concerned with the long-term maintenance of the plant and the constraints on his (and institutional) operations such as collective bargaining agreements with labor.

This raises the thorny question of allowing academic units to contract outside the physical plant department for cleaning and other services or to operate the services themselves with student labor. The issues include collective bargaining agreements, commitment to university personnel, quality of maintenance required, and quality control.

Maintenance standards must be set by the institution, for it is the institution and its officers who are ultimately responsible for the health and well-being of its population.

Contract cleaning is thought to be cheaper than in-house custodial care. Since 95 percent of cleaning costs are for labor, the wage and benefit package for custodians is the primary cost factor. Contract custodians are usually paid low hourly wages and receive few, if any, benefits. While less costly to an institution, contract cleaning requires extensive monitoring to ensure that specified standards are met. Also, contract cleaners are not part of the institutional fiber and they do not feel it is "their school."

If an academic department wants contract cleaning, it must be with the approval of the central administration and should be administered through the plant department. The decision for a unit to go to contract cleaning may be viewed as a threat by the plant department and may create a morale problem. On the other hand, if top quality maintenance is being delivered by the plant department for the least possible

cost within institutional constraints, contract cleaning may prove to be a good control experiment.

Besides contract cleaning, should academic units be allowed to go outside for work normally done by the plant department such as painting, electrical, or minor renovations? These jobs can sometimes be done cheaper by outside forces. Again the issue is one of institutional commitment to the plant personnel and the wage and benefit package provided by the institution, which may be higher than community standards.

The question of overhead of the physical plant department is often seen as the "killer" in terms of getting work done by in-house forces. The overhead rate covers the fixed expenses of administering the physical plant department. The more work that is contracted out, the larger the burden of the administrative overhead that will fall on the remaining work done by in-house labor. Unless the support staff can be curtailed, a self-fulfilling situation can occur whereby each outside job creates a corresponding increase in institutional costs.

The plant department should be able to offer several levels of service and provide the one that best meets the user's needs. Routine maintenance would be services by the physical plant department with the cost approval of the academic unit. Deferred maintenance should not be allowed to increase beyond the changeover period, and a special fund for this purpose may be necessary to pay the physical plant department.

Utility distribution is a "natural monopoly" of physical plant. Energy conservation now becomes a dual responsibility since the academic units have a budgetary incentive to use only as much energy as necessary to support their program. Therefore the "customers" will benefit from working with the physical plant department in determining what structural, mechanical, and electrical changes will reduce energy consumption. Capital expenditures for energy controls should no longer be seen as competing for other resources since the pay-back periods and benefits to the institution and the academic divisions are understood and will be of direct benefit to the units.

The physical plant department will no longer be in the position of being mandated to lower energy consumption with no control over the users. Under the proposed system it will be a vendor of energy technology.

Energy consumption is directly related to user activities. For example, a chemistry department has a sealed building requiring six air changes per hour, 24 hours a day, seven days a week, because of the "nature of research." The physical plant administrators attempted to determine if it was needed at night and at weekends, but they failed because of the chemistry department's territorial feelings and the nature of the special equipment locations. But if the chemistry department were paying for the cost of those air changes, the fans probably would not be running continuously, and if they were it would be because the users felt it was that important and were willing to pay for it.

Finally, plant operation and maintenance can be charged as a direct expense to a research contract, under space costing, for space directly related to research. For example, by directly charging the cost of energy, the institution avoids the upward spiral of indirect cost. At the same time the contracting agency is paying for the energy specifically used for research instead of a percentage of the institution's overall bill. If the accounting is accurate, the direct costing of space should benefit both the institution and the sponsoring agency. (See Brown University p. 27).

## A Room with a View

Another aspect of appraising the "rent" for an institution's space beyond the area and time formula is to give each room a desirability factor. There are a number of possible approaches and variables that can be used to determine "what is space worth?" For example, all offices are not created equal. Some are bigger than others; some have views, some do not; some are old and have charm, others are sterile; some are close to parking; others are close to power centers on campus. Can a dollar value be placed on these intangible yet very tangible space attributes?

A simpler approach developed by Walter Matherly and John Blackburn for Duke University, under an EFL grant, places all space into a free market pool.

"The optimum allocation of space is achieved when full use is made of it and when the cost of the space used by a program just equals the value of the space to the program which uses it. Prices are set at levels which allow for everything to be sold. Buyers purchase only if the price is a fair measure of their desire for it. The prices at which different types of space are offered should be set at a level sufficient to clear the market, i.e., to ensure full use of space, but to leave no buyer unsatisfied.... Space types in short supply will subsequently have to bear relatively high prices.... Space of a less popular type will command relatively lower prices in order to attract enough programs to ensure it full use."

Under this system, rents are charged to the activities and therefore may not equal the costs of space usage. The pricing of classroom space by desirability of location and class times may be another method of preventing bunching of classroom and teaching laboratory utilization.

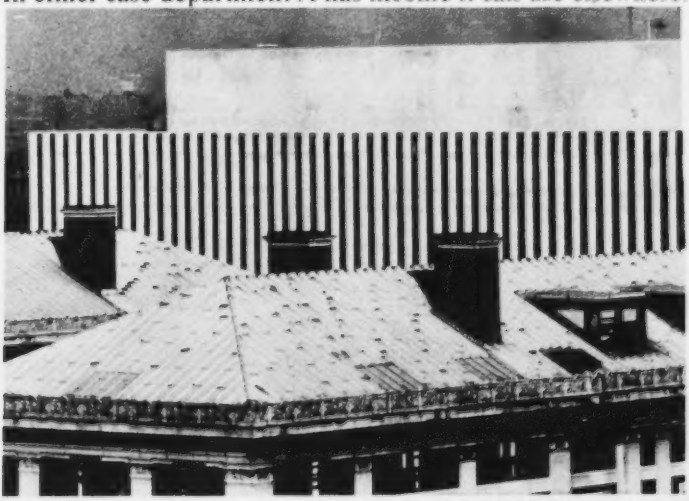
An alternative method of determining the value of an institution's space is to compare it with similar space in the commercial market. Using the open market allows for easy assessment of intangible factors such as the age and condition of facility, desirability of location, and quality of ambience (views, carpeting, airconditioning, fireplace) of the space. In a

rural setting, the rental fee could be determined on the annual amortization cost of a new facility on a square-foot basis. For income generation, this space-value figure could be used as the basis for computing rental charges to outside nonprofit agencies.

It should be remembered that space costing may not save the institution direct operating funds. Its purpose is to slow down expansionist tendencies and encourage economy at the local level through central information and clearance instead of with central referring.

If there are not enough "customers" for a specific building, then the institution should consider alternatives for the space such as rental, divestiture, or closure.

The income to pay for space would come from an appropriation from the general income of the institution to the operating unit. Charges for space are collected by the institution. The value of the transfer of funds lies in the ability of local units to substitute space and rent income for other resources. Space shrinkage by department A will accommodate expansion by department B. The expanding unit (B) will either pay the central account additional money for more space or transfer funds directly to the leasing department (A). In either case department A has income it can use elsewhere.



## Examples of Space Costing

Harvard University distributes the costs of space by directly charging for the operation of the physical plant. But the Harvard situation—its history, endowment, and resources—is somewhat unique. Harvard operates on the "every tub on its own bottom" (ETOB) philosophy by which each college, museum, and library is a separate cost center with its own income from endowments, tuition, grants, gifts, and contracts. Services required to support their mission are purchased in a "free market" both within and outside the university.

At Harvard, the colleges contract with Buildings and Grounds (B & G) for the custodial services necessary for their operation. The quantity and level of service for the year is determined jointly by B & G and the college. B & G also acts as a utility that distributes heat and power to the campus and bills the units for their consumption.

B & G feels the cleaning arrangements developed with each unit is an educational process for both parties—but a time-consuming one. When necessary to cut costs for a college, B & G has even recommended contract cleaning, but under B & G supervision.

The decentralization of the system created some potential maintenance problems when the faculties of the colleges decided to use maintenance reserve accounts to meet other operating needs. But this is what many institutions across the country did in one form or another to meet the fiscal crises of the last few years. Maintenance always seems to get cut first.

Major maintenance and emergencies are decided jointly by B & G and the specific dean. When there is a disagreement on the necessity of work, there is an appeals process whereby the dispute is taken to the senior administrators for a decision. Because it occurs infrequently it is not a formal process.

That space costs money is understood by the college administrators. If college A uses space in college B, A is charged the operating and maintenance cost of that space. Observers report that the deans care about their buildings

(some more than others) like homeowners or landlords. Buildings have even been sold by one college to another.

Duke University Medical Center has chosen the ETOB approach as its method for becoming a national medical-research center. Each clinic and research department, "... is given a piece of turf and they have to keep it hot and supported." Departments are expected to cover their direct and indirect (overhead) cost. The result is "There is no poorly used space." Duke uses the square foot as the vehicle for carrying all indirect costs. This includes physical plant, insurance, amortization, depreciation, and grounds care as well as central university services and administration support. As all costs must be covered by income, the incentive to use only as much space as necessary is strong. Duke does not directly charge indirect expenses. Each department chairman is "made aware" of what his indirect costs are and is expected to meet them.

Duke University uses a space inventory system (see Resources) that was originally developed under an EFL grant to determine new construction needs.

All plant charges are made on a per building basis. Departments that occupy a whole building know exactly what their operating costs are, including their contribution to ground care and parking maintenance based on the building's gross area. For shared space, the department is charged for the percentage of space occupied.

All costs are weighed against their contributions or the necessity for meeting the goals of the departments. The departments control their priorities and fund the items that meet their needs. This does not mean that all programs at Duke are self-supporting. The chairman and faculty support programs that cannot cover their expenses but are considered to be important to the overall goals of the department or school.

Departments of the Medical Center can also pledge to provide a percentage of the capital dollars for a new building. This direct investment creates a condominium approach to financing and operation.

Duke feels its atmosphere of laissez-faire stimulates and

motivates departments to generate income through research, grants, and gifts. This is seen as the major strength of the system.

The prime motivating factor for Duke Medical Center to charge its units for all environmental and other indirect space costs is that it allows them to recover these costs from research contracts and from third-party reimbursements (Medicare, Medicaid, and Blue Cross, etc.). The Center receives 40 percent of its income from Medicare and Medicaid. An indirect cost can be reimbursed if it is properly allocated and shown as a legitimate expense of patient care or research support.

The percentage of overhead recovery that an institution receives is not important. What expenses that percentage covers, however, is important.

Brown University uses a space inventory system called INSITE II (Institutional Space Inventory Techniques) developed by MIT (see Resources) which uses a square-foot cost as the base for recovering research costs.

Brown currently determines the operating and maintenance costs of each campus building. Each department determines the percentage of its space that is used for research, instruction, and other activities. For example, a research laboratory will be used 100 percent for research. A general laboratory may be used 50 percent for research (the percentage may be for time, area, or both). Brown has determined that 32 percent of its education plant (and 11 percent of the campus plant) is used for research and covers that percentage of the building's operating and maintenance cost. Brown also allocates the value of equipment and buildings based on square footage. To this they add a cost for administration, services, and employee benefits. This composite figure—indirect costs allocated to research—establishes a rate applied to a Modified Total Direct Cost Base for research overhead recovery instead of the more popular percentage of salary and wages.

Brown is also testing a system developed by MIT called Space Cost Analysis System (SCAN) that calculates costs and/or funding for institutional space. SCAN can manipulate

ten operational expenses (steam, electricity, chilled water, insurance, etc.), ten funding sources (federal, state, private, etc.), and generate reports. It gives, for example, each department's total square footage (in all spaces on campus), the number of spaces, the total funding of all spaces, the total cost of all spaces, and the per-square-foot costs. This can also be done by space type—classrooms, laboratories, offices, mechanical equipment rooms, study areas, etc. Matrixes of buildings and departments can be developed giving total costs by department, building, and square-foot costs.

Brown will not use this system for directly charging academic units for costs. But it will use the information as a budgetary tool in working with department chairmen so they can see more completely the resources their programs use.

The University of Alabama in Birmingham (UAB) and the University of Rhode Island (URI) are two state institutions at different stages of space costing. At each institution the primary motivation for space costing is to recover research costs.

URI is slowly moving in the direction of cost centering and is installing the INSITE II system. The first task was simply to inventory the entire campus, but this can be a long and expensive process. (The MIT Office of Facilities Management Systems has collected cost data that suggests a 1½¢ per square-foot cost as reasonable if the institution has fairly up-to-date scale floor plans.) Once it is accomplished, however, URI will have an exact accounting of all its space, usage, and assignments. With this as a base, building costs will be developed showing departments what their environmental costs are. Beginning with utilities, departments will be encouraged to conserve their usage by receiving a percentage (not yet determined) of savings generated. Whether energy charges will be direct or indirect, with savings credited to their account, has not yet been determined. URI is also installing an accounting software package which has a cost centering technique (see Resources), but URI says that direct charging of space is "down the road a bit."

The immediate goal is to make the university community aware of space costs and to provide incentives for savings. The

faculty must see the benefits if economies are to be realized. Energy is being used as the wedge into the physical consciousness.

The University of Alabama in Birmingham indirectly charges all utilities to the colleges. These costs are distributed on a square-foot basis, and the INSITE II system is used as a basis for cost distribution.

At present the space inventory system at UAB is used for information and report purposes (e.g. Higher Education General Information Survey—HEGIS) and recovery on research. UAB now uses the percentage of salary method for determining recovery. The administration plans to use a two-tier approach that will enable them to recover facility-related costs. UAB also says that it will move to space costing, i.e., direct charging of environmental support cost "if times continue as they are." While the university does not expect space costing to bring about an actual shrinking of space, it does expect that the local review of space needs and costs will cause a realignment of space.

UAB does not expect great resistance from the deans and faculty provided they are involved from the beginning. It is also felt that the benefits to the deans of greater resource control will outweigh the additional administrative responsibility. If the financial problems of the institution are presented completely and honestly to the faculty, then financial changes can be implemented with broad consensus. Too often, central administrators believe that their faculties do not care, or that they should be sheltered from institutional realities. But if the academic mission of the institution is carried out by the faculty, then they must understand the administrative systems and their rationale that are implemented to help UAB achieve its goals.

The University of Pennsylvania treats space as an indirect expense. Each department is charged "rent." The reason is simple: Space costs money. As universities have never depreciated their buildings, many are now faced with serious deferred maintenance problems. The university charges each department a cost based on the average value per square foot of all campus buildings using their insurance

value and spread over a 50-year amortization schedule. This was done to equalize old and new space on campus.

Each college was allocated the money necessary to meet its rent. Beginning in the 1976-77 academic year, each college was funded 95 percent of its rent. The balance has to come from college sources and is placed into a deferred maintenance fund. The allocation to support the space charge will be reduced gradually, 1 percent a year, over the next few years. The university reports that a space consciousness is developing slowly, and space exchanges are beginning to occur that give both relinquishing and absorbing units relief.

## Weighing the Pros and Cons

Although there are a multitude of benefits for an institution adopting space costing, some aspects of this management system will not suit every user. Before making the first move, an administration should carefully consider the following.

☐ Maintenance of the physical plant may become uneven. Wealthy units, particularly those with large research contracts, will be able to afford better maintenance than poor departments or colleges. The engineering college will be better maintained than the college of arts and science. This is a problem at Harvard University where the Business School is better maintained than the Divinity School.

☐ Academic managers are more likely to put their resources into people and programs instead of plant, thereby creating a potential problem with deferred maintenance. Given the choice between fixing leaking skylights and hiring an additional faculty member, where will the dean or department head put his money? An appeals process or review is necessary to settle such problems.

☐ Academic managers may have to hire operation or plant managers to oversee the system and deal with the physical plant department. This will require additional expense for salary and office.

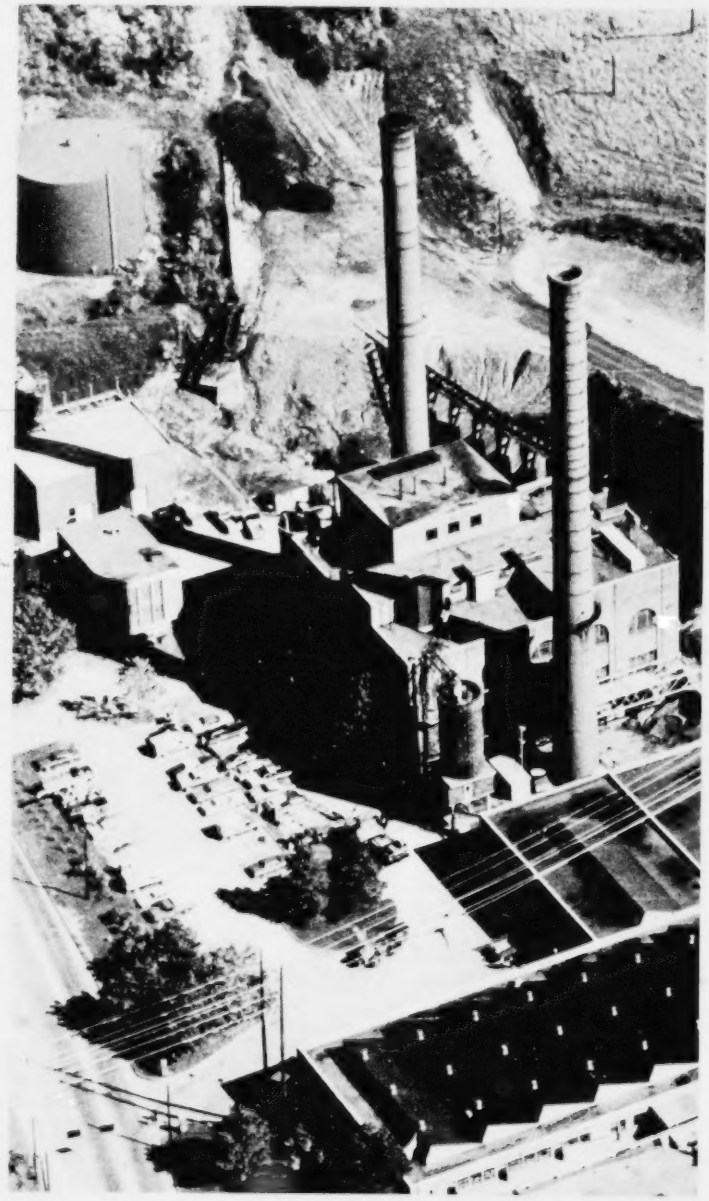
☐ Academicians may resist this type of resource allocation. Many will say, "I am an educator, not a janitor." Central administration will have to secure the full cooperation and support of the deans or department heads before moving to cost accounting for environmental resources or the system will fail—badly. Central administration will have to prove to the academic units that it is to their benefit to move in this direction.

☐ The startup costs for space costing may be high, especially if the campus has to start a space inventory system from scratch.

☐ If an administration institutes cost accounting with a hidden agenda the result will be devastating. And blame will fall on "that new system." Cost accounting is a tool. It can be used as a plowshare or a sword.

## Questions an Institution Should Ask Itself

1. What percentage of the institution's budget (including all costs from heat to insurance) does the physical plant absorb? What are the plant costs per student, per faculty member, and per square foot?
2. Since the academic units of the school generate income through teaching, research, and other activities, should their plant expenses be allocated differently from those of the auxiliary enterprises of the campus?
3. What is the total cost of the academic program, including indirect cost?
4. Should costs be identified on a per program basis?
5. Is the present allocation of physical plant resources satisfactory? From whose viewpoint?
6. What relationship is there between the plant expense and control of the expense item?
7. What is the relationship, if any, between control of space, use of space, and cost of space?
8. Does your institution expect enrollment to decline in the years ahead? If so, do you plan to reduce the amount of facilities?
9. Would space costing be a viable mechanism for space resource allocation?
10. If space costs are charged, which method of allocating them would be best: charging the operating and maintenance cost of the plant, or what the space would rent for on the open market, or a combination of the two?
11. Should the cost be directly charged or indirectly made against the academic unit?
12. If the user cannot control the expense item, should it be charged?
13. Are the potential benefits to be gained from space costing greater than the conversion and startup costs?



## Managerial Consensus

Space costing requires an institution to make a commitment that must originate with top administrators. Following this lead, the staff consensus must be broad, otherwise a space costing system will not be fully effective. Experience shows that it cannot be pushed onto unwilling academic managers, therefore all preliminary discussions about establishing space costing must include faculty, deans, and/or department heads.

Space costing requires a lot of information to be generated. The administration must ensure that everyone has access to the information or else the academic managers will mistrust it and also mistrust decisions made by the central administration. Duke Medical Center says that a major benefit of its space system is that everyone using it works from the same information base.

Responsibility for the physical plant by academic managers may be viewed as a backward step by the physical plant department. But viewed dispassionately the step is forward since it should lead to better use of the institutions' resources. Under the traditional system there has been little coordination between the plant managers and the users of space but by giving responsibility for plant to the academic managers the gap between user and responsibility is narrowed, with the expertise of the plant manager being called upon to service the units.

The present impact of plant reductions are often invisible, for they are implemented by central administration and the plant department without involvement of the user. The plant department often operates from a weak political base within the institution and the benefits of good plant management are understood by only a few.

When cuts are required, it is easier for academic administrators to cut plant first. Maintenance is easily postponed even though the cost of it increases every year. Maintenance, it appears, can always be put off another year. Central administration performs a balancing act, attempting to take care of all direct and indirect academic needs. Short-range plant cuts

eventually absorb long-term academic resources, and the academic units are not aware of this.

Historically, the physical plant department has not been able to educate the campus, particularly the academic area, as to its mission with the university. The table of organization of the institution keeps the two far apart. Space costing does not change the reporting lines, but it does change the working relationship of plant so that its purpose is clear to the academic units, the costs of its service are clear and understood, and the plant department is seen as responsive and responsible to the academic mission instead of to the buildings.

# Resources: Software Packages

An institution looking for software should evaluate its long- and short-term institutional needs and compare them with the capabilities of software packages on the market. The cost of the software, including institutional support for personnel, computer, and office costs, should be weighed against an in-house system. Software packages are tools, not solutions.

INSITE II is a computerized space accounting system that can store, manipulate, and retrieve a vast quantity of space usage and physical plant data. The user has great flexibility in report design.

INSITE II uses an English-like problem-oriented language, which makes the system accessible to noncomputer or nontechnical personnel. The INSITE II system was originally developed by MIT to provide support information for the institution's own space allocation committee. Three institutions, Brown and Syracuse Universities, and the Harvard Medical School asked if the system could be shared with them. The result is a user's group or consortium of 18 institutions (including hospitals) that use the INSITE II system and have a formal, as well as an informal, exchange mechanism on space management.

MIT directs the consortium and retains control over the software package, its updating, and ongoing development. Members pay an initial startup fee to MIT as well as an ongoing charge for system support and guidance on its applications. The charge for each member is determined by the amount of MIT staff support required.

As in any computer system the quality of output and report generation is dependent on the quality and type of information put in. NCHEMS Higher Educational Facilities Inventory and Classification definitions are generally used, but users can use their own definitions instead.

The INSITE II system can manipulate 15 data elements including room number, flow area, organizational assignments, room use, groups and activities assigned to rooms, rank

and numbers of occupants, floor covering, and paint-date information. Not all INSITE II users use all 15 data elements, and many do not use the items as originally intended. For instance, the item for floor covering can be used for a different piece of information that would be more beneficial to an institution.

The major benefit of INSITE II is its ability to manipulate these 15 variables and produce reports giving the information required in any format that the user needs. It can, however, only compute 3 of the 15 variables. INSITE II might best be viewed as a storage and retrieval system capable of producing reports for academic management. The second major benefit of INSITE II is the consortium itself. There appears to be an extensive flow of information among INSITE II members and MIT and they all meet periodically.

The cost of INSITE II membership is:

| | |
|---|---|
| Startup (program and operations manual) | $250 |
| Training (two people at MIT) | $1,000 |
| Consulting on data definition and startup | $400 |
| | $1,650 |

Monthly support costs vary between $400 and $800 depending on the extent of additional support needed from MIT. The average annual cost after installation is $7,500. These costs do not include the cost to the institution itself in establishing a space inventory of the campus. A contract is established between MIT and the using institution delineating the responsibilities of both parties to each other. The contract is reviewed annually to determine if adjustments should be made to the monthly fee.

INSITE III is being developed, and SCAN-Space Cost Analysis System (see Brown University) will eventually be part of the INSITE program. SCAN will also allow the institution to compute building cost on a square-foot basis using ten different plant variables. SCAN is still in the testing stage and will not be part of the INSITE system until late 1977. The equipment required is an IBM OS/360 Model 40 with 256K memory, and one or more disk pack drives.

Caveat emptor: INSITE has been described as a "Black Box" by some of its users. The institution purchases a tape and

must adjust its data to fit the INSITE format. The program has been designed for flexibility of output, but cannot be easily adjusted to fit the data fed into it by individual campuses. For example, buildings at MIT have letters and numbers instead of names. INSITE therefore has only 4 characters for building names.

INSITE, because of the language it is written in, is expensive to run. Since INSITE definitions must be used, INSITE personnel will help the user adjust its definitions to INSITE.

Kreon Cyros, Director, Office of Facilities Management Systems, Massachusetts Institute of Technology, 77 Massachusetts Avenue, E 19-451, Cambridge, Mass. 02139. 617-253-6168

The Duke Medical Center Space Information System originated in 1966 under a research project to develop techniques for assisting institutions of higher education with problems of facilities planning, particularly new construction requirements. It was funded jointly by Educational Facilities Laboratories and Duke University.

The Duke system can store and manipulate up to 64 variables. The items include building, room number, room type, department assignment, major and minor users for multiple use space, and space funding (university/non-university sources), as well as detailed information on space facilities and characteristics such as chilled water, acid drains, ceiling types, fluorescent or incandescent lighting, vacuum hoses, and available gas.

Duke Medical Center will provide its space inventory system to any institution without charge. The program is written in PL 1 and FORTRAN and does require the using institution to have personnel with computer expertise. Duke provides a series of command cards for report generation. An information report which has not been established requires a brief program to be written to retrieve the data.

The Duke system requires maintenance by the institution's computer center. Duke does not provide the type of backup and support that MIT does, but its director will travel

and help any institution set the program up, requiring only travel expenses to be covered.

Melvin W. Slaughter, Director of Space & Property Control, Duke University Medical Center, Durham, N.C. 27710. 919-684-3879

Purdue University's Office of Schedules and Space will make available its space inventory system through an annual or long-term lease arrangement. The Purdue Space Inventory System is run on a Control Data Corporation 6500, requiring 70,000 words, and is written in COBOL. Contract arrangements may be made individually between an institution and the Copyright Section of Purdue Research Foundation. Additional technical information may be obtained from the Office of Schedules and Space.

Fred Wolf, Office of Schedules and Space, Room 328, Engineering Administration Building, Purdue University, West Lafayette, Ind. 47097.

Cornell University's Utility Distribution System (UDS) steps energy costs and consumption (Btu's and lb. of steam) to a square foot per building basis. The system can report utility costs and consumption on a building, room, floor, etc., basis. The system is both an energy information data base and an energy accounting system. UDS cross tabulates a file of water, electrical, steam, etc., consumption based on meter readings. It also carefully guess estimates individual consumption when one meter serves several buildings.

This program is available through College and University System Exchange (CAUSE), 737–29th Street, Boulder, Colo. 80303. 303-492-7353. CAUSE is a national professional association "dedicated to the advancement and use of information systems in higher education" and is a clearinghouse for exchanging systems information. This is accomplished primarily through a library of contributed administrative systems from member institutions. Design of systems as well as computer programs are exchanged. Institutional membership fee is based on enrollment. Dues begin at $100 for schools with less than 2,000 FTE, and increases at $100 per

2,000 FTE increments to $1,000 for 18,000 FTE and over.

James Storelli, System Analyst, Management Systems & Analysis, Day Hall B7, Cornell University, Ithaca, N. Y. 14853. 607-256-7250

The National Center for Higher Education Management Systems (NCHEMS) Costing and Data Management System is designed to assist institutions in the implementation of cost studies. RRPM is an instructional cost simulation model. It is "a tool for institutions to analyze various alternatives for the utilization of a limited set of resources... and may provide a useful point of departure for those institutions wishing to adapt a cost simulation model...." The program can distribute physical plant costs to academic units, if these units are put in as cost centers. Institutions wishing to use this system would use the Account Crossover Module (ACM) and/or the Data Management Module (DMM) as well as the Resource Requirement Prediction Model (RRPM).

The Costing and Data Management System is currently used by about 500 schools. Institutions should contact NCHEMS to ascertain suitability of the program for their institutional requirements.

The cost of the package is $200. It is written in a low level COBOL. In general the system can be run on computers with 64k bytes of core.

Richard Johnson, Resource Requirements Predication Model (RRPM), National Center for Higher Education Management Systems, P.O. Drawer P, Boulder, Colo. 80302. 303-492-8079

# Resources: People

**Space Costing: Impact on Utilization**

Dr. Jane Elechleep, Assistant Vice President for Planning & Analysis, Duke University Medical Center, Durham, N.C. 27710.

**Space Costing: Impact on Research**

Mr. Roy Davey, Director of Space Management, Architectural Planning Office, Harvard Medical School, 25 Shattuck Street, Boston, Mass. 02115.

Mr. Thomas Wunderlick, Director of Research Administration, Brown University, Providence, R.I. 02912.

Dr. Jane Elechleep (see above).

**Space Costing: Impact on Custodial Care**

Paul Smith, Assistant Director of Physical Plant, Harvard University, Cambridge, Mass. 02158.

**Contract Cleaning**

Dan DeYoung, Director of Service Operation, Stanford University, Stanford, Calif. 94305.

John Mueller, Director of Physical Plant, Drexel University, Philadelphia, Pa. 19104.

Also see: "Pros and Cons of Contract Cleaning" by John C. Gardner, American School & University, December 1974.

**Space Costing: As a Component of Decentralized Budgeting**

John Straus, College Hall, Director of the Budget, University of Pennsylvania, Philadelphia, Pa. 19104.

Thomas O'Brien, Director of the Budget, Holyoke Center, Harvard University, Cambridge, Mass. 02138.

**Space Costing: Setting Up a Space Inventory**

Terry Meehan, Office of Facilities Management Systems, M.I.T., 77 Massachusetts Avenue E19-541, Cambridge, Mass. 02139.

Gregory Kasprzak, Architect Planner/Space Coordinator, Design & Project Management, Cornell University, Ithaca, N.Y. 14853.

Ms. Carol Wooten, Superintendent of Space & Facilities, Brown University, Providence, R.I. 02912.

**Space Costing: Utility Distribution**

Robert Clawson, Physical Plant Operations, Cornell University, Ithaca, N.Y. 14853.

William Tunstall, Assistant Director, Physical Plant, Duke University, Durham, N.C. 27710.

**Space Costing: Space Management**

Harvey Kaiser, Vice-President for Facilities Administration, Syracuse University, Syracuse, N.Y. 13210.

Dr. Edra Spillman, Associate Dean, Mt. Sinai School of Medicine, New York, N.Y. 10029.

Alfred Moffitt, Director of Planning, University of Alabama, Birmingham University Station, Birmingham, Ala. 35294.

# Appendix

The following definitions are taken from *Fundamental Considerations for Determining Cost Information in Higher Education*, National Association of Colleges and University Business Office, One Dupont Circle, Washington, D. C.

"The term "cost" is defined in different ways, depending on the objectives for which costs are determined....

"Financial accounting is concerned with recording, classifying, summarizing, and analyzing financial data. The financial accounting definition treats cost as the amount or equivalent paid or charged for something of value. In this sense, cost represents the total value sacrificed to obtain assets and to receive goods and services....

"Cost accounting is concerned with accumulating, classifying, summarizing, interpreting, and reporting the cost of personnel, goods, and services, and other expenses incurred to determine unit costs....

"The costing process is designed to assign or allocate costs to particular units of service provided....

"The primary difference between cost accounting and financial accounting is that the former involves obtaining unit cost information and the latter involves obtaining costs primarily by... function."

In other words, financial accounting looks at the cost or value of a service, such as cleaning or heating, on a campus-wide basis, and the focus is on the cost of the item.

Cost accounting is concerned with the cost or value of a service at a particular organization or unit level. Thus cost accounting assigns the cost of cleaning or heating to a college or department.

# EFL Publications

The following publications are available from EFL,
850 Third Avenue, New York, N.Y. 10022.
Prices include postage if orders are prepaid.

ARTS AND THE HANDICAPPED: AN ISSUE OF ACCESS Over 150 examples of how arts programs and facilities have been made accessible to the handicapped, from tactile museums to halls for performing arts, and for all types of handicaps. Emphasis on the laws affecting the handicapped. (1975) $4.00

THE ARTS IN FOUND PLACES Where and how the arts are finding homes in recycled buildings, and in the process often upgrading urban centers and neighborhoods. (1976) $7.00

CAMPUS IN TRANSITION Interprets demographic factors influencing college enrollments, discusses current academic trends, and describes how colleges are producing new income and/or providing new programs without building new facilities. (1975) $4.00

CAREER EDUCATION FACILITIES Programming guide for shared facilities making one set of spaces or equipment serve several purposes. (1973) $2.00

COMMUNICATIONS TECHNOLOGY IN HIGHER EDUCATION—REVISITED Twenty-one profiles that were distributed during 1975–76 in *Planning for Higher Education* update most of what has happened in this field during the last decade. 11x8½ reprints for $7.00 from Communications Press, Inc., 1346 Connecticut Avenue, N.W., Washington, D.C. 20036. Hardbound and paperbound editions available in Summer, 1977 from CPI.

COMMUNITY/SCHOOL: SHARING THE SPACE AND THE ACTION How schools share facilities with other public agencies to provide improved social services. The book discusses financing, planning, building, staffing, and operating community/schools. (1973) $4.00

FEWER PUPILS/SURPLUS SPACE Looks at the phenomenon of shrinking enrollments, its extent, its possible duration, and some of the strategies being developed to cope with unused school space. (1974) $4.00

FIVE OPEN PLAN HIGH SCHOOLS Text, plans, and pictures explain how secondary schools operate open curriculums in open spaces. (1973) $3.00

FOUR FABRIC STRUCTURES Tent-like or air-supported fabric roofs provide large, column-free spaces for physical recreation and student activities at less cost than conventional buildings. (1975) $3.00

GENERATING REVENUE FROM COLLEGE FACILITIES Strategies used by institutions of higher education to produce income from their land and buildings. (1974) Single copies free, multiple copies 50 cents each.

THE GREENING OF THE HIGH SCHOOL How to make secondary school healthy. Includes open curriculums and alternative education programs. (1973) $2.00

HIGH SCHOOL: THE PROCESS AND THE PLACE Planning, design, environmental management, and the behavioral and social influences of school space. (1972) $3.00

HOUSING FOR NEW TYPES OF STUDENTS Colleges faced with declining enrollments from the traditional age-group should widen their constituency by modifying their accommodations for senior citizens, those over 25, those under 18, the handicapped, married, single parents, etc. (1977) $4.00

MEMO TO AMBULATORY HEALTH CARE PLANNERS A general guide to making health centers more humane and flexible. (1976) $2.00

THE NEGLECTED MAJORITY: FACILITIES FOR COMMUTING STUDENTS Advocates making college facilities more amenable and available to students who do not live on campus. Includes examples of facilities for studying, eating, leisure, shopping, resting, recreation, etc. (1977) $4.00

NEW PLACES FOR THE ARTS Describes 49 museums, performing arts facilities, and multi-use centers. Includes listings of the consultants. (1976) $5.00

PATTERNS FOR DESIGNING CHILDREN'S CENTERS For people planning to operate children's centers. (1971) $3.95

PHYSICAL RECREATION FACILITIES Places providing good facilities for physical recreation in schools and colleges—air shelters, roofing existing stadiums, shared facilities, and conversions. (1973) $3.00

THE PLACE OF THE ARTS IN NEW TOWNS Approaches for developing arts programs and facilities in new towns and established communities. Insights and models for the support of the arts, the use of existing space, and financing. (1973) $3.00

REUSING RAILROAD STATIONS Advocates the reuse of abandoned stations for combined public and commercial purposes, including arts and educational centers, transportation hubs, and focal points for downtown renewal. (1974) $4.00

REUSING RAILROAD STATIONS BOOK TWO Furthers the advocacy position of the first book and explains the intricacies of financing the development of a railroad station. (1975) $4.00

THE SECONDARY SCHOOL: REDUCTION, RENEWAL, AND REAL ESTATE Warns of the forthcoming decline in high school enrollments. Suggestions for reorganizing schools to prevent them from becoming empty and unproductive. (1976) $4.00

SPACE COSTING: WHO SHOULD PAY FOR THE USE OF COLLEGE SPACE? Describes a technique for cost accounting the spaces and operating and maintenance expenses to the individual units or programs or an institution. (1977) $4.00

SURPLUS SCHOOL SPACE: OPTIONS & OPPORTUNITIES Tells how districts have averted closed schools by widening educational and social services, increasing career and special education programs. Advises how to make local enrollment projections, and how to decide whether to close or not. (1976) $4.00

STUDENT HOUSING A guide to economical ways to provide better housing for students. Illustrates techniques for improvement through administrative changes, remodeling old dorms, new management methods, co-ops, and government financing. (1972) $2.00

TECHNICAL ASSISTANCE FOR ARTS FACILITIES: A SOURCEBOOK Where arts groups can find help to establish their own studios, auditoriums, etc. Lists federal, state, and private sources. (1977) Free

We're Pleased That You Are Interested in Making the Arts Accessible to Everyone... Describes arts programs and facilities that have been designed to overcome barriers to children, the elderly, and the handicapped. Contains an enrollment card for a free information service. (1976) Free

Schoolhouse A newsletter on financing, planning, designing, and renovating school facilities. Free

# Films

The following films are available for rental at $9.00, or for purchase at $180.00 from New York University Film Library, 26 Washington Place, New York, N.Y. 10003, Telephone (212) 598-2250.

New Lease on Learning
A 22-minute, 16mm color film about the conversion of "found space" into a learning environment for young children. The space, formerly a synagogue, is now the Brooklyn Block School, one of New York City's few public schools for children aged 3–5.

Room to Learn
A 22-minute, 16mm color film about The Early Learning Center in Stamford, Connecticut, an open-plan early childhood school with facilities and program reflecting some of the better thinking in this field.

The City: an Environmental Classroom
A 28-minute, 16mm color film, produced by EFL in cooperation with the New York City Board of Education, shows facilities and resources in and around the city in which effective programs of environmental education are under way. Such diverse sites as the Hudson River, an incinerator, Chinatown, Governors Island, and a children's camp in a rural setting are analyzed for their contributions to the education of city children.

**Photo credits**

pp. 11,24, George Zimbel
p. 33, Russ Hamilton